



Sequence Listing

<110> Hoffmann-La Roche, Karoly  
McFarland, Keith C.  
Segaloff, Deborah L.  
Seuberg, Peter H.

<120> Glycoprotein Hormone Receptor Molecules

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<141> 2004-01-09

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<151> 2001-06-07

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<151> 1994-03-07

<150> US 07/781,153

<151> 1991-10-31

<150> PCT/US90/02488

<151> 1990-05-04

<150> US 07/347,683

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gca gtg ctg ctg ctg aag cct tca cag ctg cag tcc cga 124  
Ala Val Leu Leu Lys Pro Ser Gln Leu Gln Ser Arg  
15 20 25

gag ctg tca ggg tcg cgc tgc ccc gag ccc tgc gac tgc 163  
Glu Leu Ser Gly Ser Arg Cys Pro Glu Pro Cys Asp Cys  
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gca ccg gat ggc gcc ctg cgc tgt cct ggc cct cga gcc 202  
Ala Pro Asp Gly Ala Leu Arg Cys Pro Gly Pro Arg Ala  
45 50

ggc ctc gcc aga cta tct ctc acc tat ctc cct gtc aaa 241  
Gly Leu Ala Arg Leu Ser Leu Thr Tyr Leu Pro Val Lys  
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     70   75

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 Val Lys Ile Glu Ile Ser Gln Ser Asp Ser Leu Glu Arg  
     80   85   90

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     95   100   105

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     135   140

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     145   150   155

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 Glu Ile Cys Asp Asn Leu His Ile Thr Thr Ile Pro Gly  
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     185   190   195

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     210   215   220

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 Gln Gly Ala Thr Gly Pro Ser Ile Leu Asp Ile Ser Ser  
     225   230   235

acc aaa ttg cag gcc ctg ccg agc cac ggg ctg gag tcc 787  
 Thr Lys Leu Gln Ala Leu Pro Ser His Gly Leu Glu Ser  
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 Ile Gln Thr Leu Ile Ala Leu Ser Ser Tyr Ser Leu Lys  
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Ala	Thr	Leu	Thr	Tyr	Pro	Ser	His	Cys	Cys	Ala	Phe	Arg
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Phe	Glu	Asn	Phe	Ser	Lys	Gln	Cys	Glu	Ser	Thr	Val	Arg
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Lys	Ala	Asp	Asn	Glu	Thr	Leu	Tyr	Ser	Ala	Ile	Phe	Glu
315							320					325
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Glu	Asn	Glu	Leu	Ser	Gly	Trp	Asp	Tyr	Asp	Tyr	Gly	Phe
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Cys	Ser	Pro	Lys	Thr	Leu	Gln	Cys	Ala	Pro	Glu	Pro	Asp
340							345					350
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Ala	Phe	Asn	Pro	Cys	Glu	Asp	Ile	Met	Gly	Tyr	Ala	Phe
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Phe	Gly	Asn	Leu	Thr	Val	Leu	Phe	Val	Leu	Leu	Thr	Ser
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Leu	Ile	Ala	Ser	Val	Asp	Ser	Gln	Thr	Lys	Gly	Gln	Tyr
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Gly	Ala	Ala	Gly	Phe	Phe	Thr	Val	Phe	Ala	Ser	Glu	Leu
445							450					455
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Ser	Val	Tyr	Thr	Leu	Thr	Val	Ile	Thr	Leu	Glu	Arg	Trp

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40

45

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Glu Arg Ile Glu Ala Asn Ala Phe Asp Asn Leu Leu Asn Leu Ser  
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Glu Leu Leu Ile Gln Asn Thr Lys Asn Leu Leu Tyr Ile Glu Pro  
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Gly Ala Phe Thr Asn Leu Pro Arg Leu Lys Tyr Leu Ser Ile Cys  
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Asn Thr Gly Ile Arg Thr Leu Pro Asp Val Thr Lys Ile Ser Ser  
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Ser	Phe	Ala	Asp	Phe	Cys	Met	Gly	Leu	Tyr	Leu	Leu	Ile	Ala	
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Ser	Val	Asp	Ser	Gln	Thr	Lys	Gly	Gln	Tyr	Tyr	Asn	His	Ala	Ile
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Asp	Trp	Gln	Thr	Gly	Ser	Gly	Cys	Gly	Ala	Ala	Gly	Phe	Phe	Thr
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Val	Phe	Ala	Ser	Glu	Leu	Ser	Val	Tyr	Thr	Leu	Thr	Val	Ile	Thr
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Leu	Glu	Arg	Trp	His	Thr	Ile	Thr	Tyr	Ala	Val	Gln	Leu	Asp	Gln
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Asn	Tyr	Met	Lys	Val	Ser	Ile	Cys	Leu	Pro	Met	Asp	Val	Glu	Ser
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Val	Ala	Phe	Val	Val	Ile	Cys	Ala	Cys	Tyr	Ile	Arg	Ile	Tyr	Phe
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Ala	Val	Gln	Asn	Pro	Glu	Leu	Thr	Ala	Pro	Asn	Lys	Asp	Thr	Lys
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Ile	Ala	Lys	Lys	Met	Ala	Ile	Leu	Ile	Phe	Thr	Asp	Phe	Thr	Cys
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Met	Ala	Pro	Ile	Ser	Phe	Phe	Ala	Ile	Ser	Ala	Ala	Phe	Lys	Val
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Pro	Leu	Ile	Thr	Val	Thr	Asn	Ser	Lys	Ile	Leu	Leu	Val	Leu	Phe
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Tyr	Pro	Val	Asn	Ser	Cys	Ala	Asn	Pro	Phe	Leu	Tyr	Ala	Ile	Phe
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Thr	Lys	Ala	Phe	Gln	Arg	Asp	Phe	Leu	Leu	Leu	Ser	Arg	Phe	
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Gly Cys Cys Lys Arg Arg Ala Glu Leu Tyr Arg Arg Lys Glu Phe  
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 Ser Ala Tyr Thr Ser Asn Cys Lys Asn Gly Phe Pro Gly Ala Ser  
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 35 40 45  
 Ala Phe Arg Gly Leu Asn Glu Val Val Lys Ile Glu Ile Ser Gln  
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 Ser Asp Ser Leu Glu Arg Ile Glu Ala Asn Ala Phe Asp Asn Leu  
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 Tyr Ile Glu Pro Gly Ala Phe Thr Asn Leu Pro Arg Leu Lys Tyr  
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 Leu Ser Ile Cys Asn Thr Gly Ile Arg Thr Leu Pro Asp Val Thr  
 110 115 120  
 Lys Ile Ser Ser Ser Glu Phe Asn Phe Ile Leu Glu Ile Cys Asp  
 125 130 135  
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 155 160 165  
 Glu Val Gln Ser His Ala Phe Asn Gly Thr Thr Leu Ile Ser Leu  
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 Glu Leu Lys Glu Asn Ile Tyr Leu Glu Lys Met His Ser Gly Ala  
 185 190 195  
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Glu Lys Phe Thr Ser Leu Leu Val Ala Thr Leu Thr Tyr Pro Ser			
245	250	255	
His Cys Cys Ala Phe Arg Asn Leu Pro Lys Lys Glu Gln Asn Phe			
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Ser Phe Ser Ile Phe Glu Asn Phe Ser Lys Gln Cys Glu Ser Thr			
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Val Arg Lys Ala Asp Asn Glu Thr Leu Tyr Ser Ala Ile Phe Glu			
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Glu Asn Glu Leu Ser Gly Trp Asp Tyr Asp Tyr Gly Phe Cys Ser			
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Pro Lys Thr Leu Gln Cys Ala Pro Glu Pro Asp Ala Phe Asn Pro			
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Cys Glu Asp Ile Met Gly Tyr Ala Phe Leu Arg Val Leu Ile Trp			
335	340	345	
Leu Ile Asn Ile Leu Ala Ile Phe Gly Asn Leu Thr Val Leu Phe			
350	355	360	
Val Leu Leu Thr Ser Arg Tyr Lys Leu Thr Val Pro Arg Phe Leu			
365	370	375	
Met Cys Asn Leu Ser Phe Ala Asp Phe Cys Met Gly Leu Tyr Leu			
380	385	390	
Leu Leu Ile Ala Ser Val Asp Ser Gln Thr Lys Gly Gln Tyr Tyr			
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Asn His Ala Ile Asp Trp Gln Thr Gly Ser Gly Cys Gly Ala Ala			
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Gly Phe Phe Thr Val Phe Ala Ser Glu Leu Ser Val Tyr Thr Leu			
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Thr Val Ile Thr Leu Glu Arg Trp His Thr Ile Thr Tyr Ala Val			
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Gln Leu Asp Gln Lys Leu Arg Leu Arg His Ala Ile Pro Ile Met			
455	460	465	
Leu Gly Gly Trp Leu Phe Ser Thr Leu Ile Ala Thr Met Pro Leu			
470	475	480	
Val Gly Ile Ser Asn Tyr Met Lys Val Ser Ile Cys Leu Pro Met			
485	490	495	
Asp Val Glu Ser Thr Leu Ser Gln Val Tyr Ile Leu Ser Ile Leu			
500	505	510	

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Arg	Ile	Tyr	Phe	Ala	Val	Gln	Asn	Pro	Glu	Leu	Thr	Ala	Pro	Asn
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Lys	Asp	Thr	Lys	Ile	Ala	Lys	Lys	Met	Ala	Ile	Leu	Ile	Phe	Thr
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Asp	Phe	Thr	Cys	Met	Ala	Pro	Ile	Ser	Phe	Phe	Ala	Ile	Ser	Ala
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Ala	Phe	Lys	Val	Pro	Leu	Ile	Thr	Val	Thr	Asn	Ser	Lys	Ile	Leu
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Leu	Val	Leu	Phe	Tyr	Pro	Val	Asn	Ser	Cys	Ala	Asn	Pro	Phe	Leu
			590					595						600
Tyr	Ala	Ile	Phe	Thr	Lys	Ala	Phe	Gln	Arg	Asp	Phe	Leu	Leu	Leu
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Leu	Ser	Arg	Phe	Gly	Cys	Cys	Lys	Arg	Arg	Ala	Glu	Leu	Tyr	Arg
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Arg	Lys	Glu	Phe	Ser	Ala	Tyr	Thr	Ser	Asn	Cys	Lys	Asn	Gly	Phe
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Pro	Gly	Ala	Ser	Lys	Pro	Ser	Gln	Ala	Thr	Leu	Lys	Leu	Ser	Thr
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				20				25						30
Arg	Leu	Ser	Leu	Thr	Tyr	Leu	Pro	Val	Lys	Val	Ile	Pro	Ser	Gln
				35				40						45
Ala	Phe	Arg	Gly	Leu	Asn	Glu	Val	Val	Lys	Ile	Glu	Ile	Ser	Gln
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Ser	Asp	Ser	Leu	Glu	Arg	Ile	Glu	Ala	Asn	Ala	Phe	Asp	Asn	Leu
				65				70						75
Leu	Asn	Leu	Ser	Glu	Leu	Leu	Ile	Gln	Asn	Thr	Lys	Asn	Leu	Leu
				80				85						90

Tyr	Ile	Glu	Pro	Gly	Ala	Phe	Thr	Asn	Leu	Pro	Arg	Leu	Lys	Tyr
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Leu	Ser	Ile	Cys	Asn	Thr	Gly	Ile	Arg	Thr	Leu	Pro	Asp	Val	Thr
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Lys	Ile	Ser	Ser	Ser	Glu	Phe	Asn	Phe	Ile	Leu	Glu	Ile	Cys	Asp
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Asn	Leu	His	Ile	Thr	Thr	Ile	Pro	Gly	Asn	Ala	Phe	Gln	Gly	Met
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Asn	Asn	Glu	Ser	Val	Thr	Leu	Lys	Leu	Tyr	Gly	Asn	Gly	Phe	Glu
		155							160					165
Glu	Val	Gln	Ser	His	Ala	Phe	Asn	Gly	Thr	Thr	Leu	Ile	Ser	Leu
		170							175					180
Glu	Leu	Lys	Glu	Asn	Ile	Tyr	Leu	Glu	Lys	Met	His	Ser	Gly	Ala
		185							190					195
Phe	Gln	Gly	Ala	Thr	Gly	Pro	Ser	Ile	Leu	Asp	Ile	Ser	Ser	Thr
		200							205					210
Lys	Leu	Gln	Ala	Leu	Pro	Ser	His	Gly	Leu	Glu	Ser	Ile	Gln	Thr
		215							220					225
Leu	Ile	Ala	Leu	Ser	Ser	Tyr	Ser	Leu	Lys	Thr	Leu	Pro	Ser	Lys
		230							235					240
Glu	Lys	Phe	Thr	Ser	Leu	Leu	Val	Ala	Thr	Leu	Thr	Tyr	Pro	Ser
		245							250					255
His	Cys	Cys	Ala	Phe	Arg	Asn	Leu	Pro	Lys	Lys	Glu	Gln	Asn	Phe
		260							265					270
Ser	Phe	Ser	Ile	Phe	Glu	Asn	Phe	Ser	Lys	Gln	Cys	Glu	Ser	Thr
		275							280					285
Val	Arg	Lys	Ala	Asp	Asn	Glu	Thr	Leu	Tyr	Ser	Ala	Ile	Phe	Glu
		290							295					300
Glu	Asn	Glu	Leu	Ser	Gly	Trp	Asp	Tyr	Asp	Tyr	Gly	Phe	Cys	Ser
		305							310					315
Pro	Lys	Thr	Leu	Gln	Cys	Ala	Pro	Glu	Pro	Asp	Ala	Phe	Asn	Pro
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Cys	Glu	Asp	Ile	Met	Gly	Tyr	Ala	Phe	Leu	Arg				
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Met Ala Leu Leu Val Ser

tgg ctg gca ttc ttg ggc acg gga tct gga tgt cat cac 130  
 Leu Leu Ala Phe Leu Gly Thr Gly Ser Gly Cys His His  
 10 15 20

tgg ctg tgt cat tgc tct aat agg gtc ttt ctc tgc caa 169  
 Trp Leu Cys His Cys Ser Asn Arg Val Phe Leu Cys Gln  
 25 30

gac agc aag gtg aca gag att ccg acc gac ctc ccc cgg 208  
 Asp Ser Lys Val Thr Glu Ile Pro Thr Asp Leu Pro Arg  
 35 40 45

aac gcc att gaa ctg agg ttt gtg ctc acc aag ctt cga 247  
 Asn Ala Ile Glu Leu Arg Phe Val Leu Thr Lys Leu Arg  
 50 55

gtc atc ccg aaa gga tca ttt gct gga ttt gga gac ctg 286  
 Val Ile Pro Lys Gly Ser Phe Ala Gly Phe Gly Asp Leu  
 60 65 70

gag aaa ata gag atc tct cag aat gat gtc ttg gaa gta 325  
 Glu Lys Ile Glu Ile Ser Gln Asn Asp Val Leu Glu Val  
 75 80 85

ata gag gca gat gtg ttc tcc aac cta ccc aag ttg cat 364  
 Ile Glu Ala Asp Val Phe Ser Asn Leu Pro Lys Leu His  
 90 95

gaa att agg att gaa aag gcc aac aat ctt ctg tac atc 403  
 Glu Ile Arg Ile Glu Lys Ala Asn Asn Leu Leu Tyr Ile  
 100 105 110

aac ccg gag gcc ttc cag aat ctc ccc agt ctc aga tat 442  
 Asn Pro Glu Ala Phe Gln Asn Leu Pro Ser Leu Arg Tyr  
 115 120

ctg tta ata tcc aac aca ggc att aag cac ttg cca gct 481  
 Leu Leu Ile Ser Asn Thr Gly Ile Lys His Leu Pro Ala  
 125 130 135

gtt cac aag atc cag tct ctccaa aag gtt cta cta gac 520  
 Val His Lys Ile Gln Ser Leu Gln Lys Val Leu Leu Asp  
 140 145 150

att caa gat aac ata aac atc cac atc gtt gcc agg aac 559  
 Ile Gln Asp Asn Ile Asn Ile His Ile Val Ala Arg Asn  
 155 160

tcc ttc atg gga ctg agt ttt gaa agt gtg att tta tgg 598  
 Ser Phe Met Gly Leu Ser Phe Glu Ser Val Ile Leu Trp  
 165 170 175

ctg agt aag aat ggg att gaa gaa ata cac aac tgt gca 637  
 Leu Ser Lys Asn Gly Ile Glu Glu Ile His Asn Cys Ala  
 180 185

tcc aac gga act cag cta gat gaa ctg aat cta agc gat 676  
 Phe Asn Gly Thr Gln Leu Asp Glu Leu Asn Leu Ser Asp  
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aac aat aat ttg gaa gaa ttg cct aat gac gtt ttc cag 715  
 Asn Asn Asn Leu Glu Glu Leu Pro Asn Asp Val Phe Gln  
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 gga gcc tct ggg cca gtc att tta gat atc tca agg aca 754  
 Gly Ala Ser Gly Pro Val Ile Leu Asp Ile Ser Arg Thr  
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 aag gtc cat tcc tta cca aac cat ggc tta gaa aat ctg 793  
 Lys Val His Ser Leu Pro Asn His Gly Leu Glu Asn Leu  
     230                  235                  240  
  
 aag aag ctg agg gcc agg tca aca tac cgc ttg aaa aag 832  
 Lys Lys Leu Arg Ala Arg Ser Thr Tyr Arg Leu Lys Lys  
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 ctc cct aat ctg gac aag ttt gtc acc ctc atg gag gcc 871  
 Leu Pro Asn Leu Asp Lys Phe Val Thr Leu Met Glu Ala  
     255                  260                  265  
  
 agc ctc acc tac ccc agc cac tgc tgt gct ttt gca aac 910  
 Ser Leu Thr Tyr Pro Ser His Cys Cys Ala Phe Ala Asn  
     270                  275                  280  
  
 ttg aag cgg caa atc tct gaa ctt cat cca att tgc aac 949  
 Leu Lys Arg Gln Ile Ser Glu Leu His Pro Ile Cys Asn  
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 aag tct att tta agg caa gat att gat gat atg act caa 988  
 Lys Ser Ile Leu Arg Gln Asp Ile Asp Asp Met Thr Gln  
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 Ile Gly Asp Gln Arg Val Ser Leu Ile Asp Asp Glu Pro  
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 agt tat gga aaa gga tct gac atg atg tac aat gaa ttt 1066  
 Ser Tyr Gly Lys Gly Ser Asp Met Met Tyr Asn Glu Phe  
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 gat tat gac tta tgt aat gaa gtt gtt gat gtg acc tgc 1105  
 Asp Tyr Asp Leu Cys Asn Glu Val Val Asp Val Thr Cys  
     335                  340                  345  
  
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 Ser Pro Lys Pro Asp Ala Phe Asn Pro Cys Glu Asp Ile  
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 atg ggg tac aac atc ctc agg gtc ttg ata tgg ttt att 1183  
 Met Gly Tyr Asn Ile Leu Arg Val Leu Ile Trp Phe Ile  
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 agc atc ctg gcc att act ggg aac acc aca gtg ctg gtg 1222  
 Ser Ile Leu Ala Ile Thr Gly Asn Thr Thr Val Leu Val  
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 gtc ctg acc aca agc caa tac aaa cta act gtg ccc cg 1261  
 Val Leu Thr Thr Ser Gln Tyr Lys Leu Thr Val Pro Arg  
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 Phe Leu Met Cys Asn Leu Ala Phe Ala Asp Leu Cys Ile  
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 ggc atc tac ttg cta ctt ata gca tca gtt gac atc cat 1339  
 Gly Ile Tyr Leu Leu Ile Ala Ser Val Asp Ile His  
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 acc aag agc cag tac cac aac tat gcc att gac tgg caa 1378  
 Thr Lys Ser Gln Tyr His Asn Tyr Ala Ile Asp Trp Gln  
         425                 430                 435  
  
 aca gga gca ggc tgt gat gct gct ggc ttt ttc act gtc 1417  
 Thr Gly Ala Gly Cys Asp Ala Ala Gly Phe Phe Thr Val  
         440                 445  
  
 ttt gcc agt gaa ctg tca gtc tac aca ttg aca gcc atc 1456  
 Phe Ala Ser Glu Leu Ser Val Tyr Thr Leu Thr Ala Ile  
         450                 455                 460  
  
 acc cta gaa aga tgg cat acc atc aca cat gct atg caa 1495  
 Thr Leu Glu Arg Trp His Thr Ile Thr His Ala Met Gln  
         465                 470                 475  
  
 ctg gaa tgc aag gtg cag ctc cgg cat gct gcc agc gtc 1534  
 Leu Glu Cys Lys Val Gln Leu Arg His Ala Ala Ser Val  
         480                 485  
  
 atg gta ttg ggc tgg act ttt gcc ttc gca gct gct ctc 1573  
 Met Val Leu Gly Trp Thr Phe Ala Phe Ala Ala Ala Leu  
         490                 495                 500  
  
 ttc ccc atc ttt ggc atc agt agc tac atg aaa gtg agc 1612  
 Phe Pro Ile Phe Gly Ile Ser Ser Tyr Met Lys Val Ser  
         505                 510  
  
 atc tgc ctg ccc atg gat atc gac agc cct ttg tca cag 1651  
 Ile Cys Leu Pro Met Asp Ile Asp Ser Pro Leu Ser Gln  
         515                 520                 525  
  
 ctg tat gtt atg gcc ctc ctt gtc ctc aat gtc ctg gcc 1690  
 Leu Tyr Val Met Ala Leu Leu Val Leu Asn Val Leu Ala  
         530                 535                 540  
  
 ttt gtg gtc atc tgt ggc tgc tat acc cac atc tac ctc 1729  
 Phe Val Val Ile Cys Gly Cys Tyr Thr His Ile Tyr Leu  
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 aca gtg agg aat cct acc att gtg tcc tca tca agc gac 1768  
 Thr Val Arg Asn Pro Thr Ile Val Ser Ser Ser Asp  
         555                 560                 565  
  
 acc aag att gcc aag cgc atg gcc aca ctc atc ttc aca 1807  
 Thr Lys Ile Ala Lys Arg Met Ala Thr Leu Ile Phe Thr  
         570                 575  
  
 gac ttt ctc tgc atg gcc ccc att tca ttc ttt gcc att 1846  
 Asp Phe Leu Cys Met Ala Pro Ile Ser Phe Phe Ala Ile  
         580                 585                 590  
  
 tct gcc tcc ctc aag gtg ccg ctc atc act gtg tcc aag 1885

Ser Ala Ser Leu Lys Val Pro Leu Ile Thr Val Ser Lys  
595 600 605

gcc aag att ctc cta gtt ctg ttc tac ccc atc aat tct 1924  
Ala Lys Ile Leu Leu Val Leu Phe Tyr Pro Ile Asn Ser  
610 615

tgt gcc aat cct ttc ctc tac gcc att ttc acc aag aac 1963  
Cys Ala Asn Pro Phe Leu Tyr Ala Ile Phe Thr Lys Asn  
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tgt tat gaa atg caa gcc cag att tac agg aca gaa acc 2041  
Cys Tyr Glu Met Gln Ala Gln Ile Tyr Arg Thr Glu Thr  
645 650 655

tca tcc gct acc cac aac ttc cat gcc cga aag agc cac 2080  
Ser Ser Ala Thr His Asn Phe His Ala Arg Lys Ser His  
660 665 670

tgc tcc tca gct ccc aga gtc acc aat agt tac gtg ctt 2119  
Cys Ser Ser Ala Pro Arg Val Thr Asn Ser Tyr Val Leu  
675 680

gtc cct ctt aat cat tca tcc cag aac taaa aatcaatgtg 2160  
Val Pro Leu Asn His Ser Ser Gln Asn  
685 690 692

aaaaatggatc ctcacccattga aagacaatata tgactccattc tgaagagcag 2210

gcacatggact aaatggcaat cctactgcac atctcatcta attaatctc 2260

tctgggtctc tgcattggcag actgatcagg gaccattaat caccctttg 2310

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Leu Cys Gln Asp Ser Lys Val Thr Glu Ile Pro Thr Asp Leu Pro  
35 40 45

Arg Asn Ala Ile Glu Leu Arg Phe Val Leu Thr Lys Leu Arg Val  
50 55 60

Ile	Pro	Lys	Gly	Ser	Phe	Ala	Gly	Phe	Gly	Asp	Leu	Glu	Lys	Ile
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														70
Glu	Ile	Ser	Gln	Asn	Asp	Val	Leu	Glu	Val	Ile	Glu	Ala	Asp	Val
														80
														85
Phe	Ser	Asn	Leu	Pro	Lys	Leu	His	Glu	Ile	Arg	Ile	Glu	Lys	Ala
														95
														100
Asn	Asn	Leu	Leu	Tyr	Ile	Asn	Pro	Glu	Ala	Phe	Gln	Asn	Leu	Pro
														110
														115
Ser	Leu	Arg	Tyr	Leu	Leu	Ile	Ser	Asn	Thr	Gly	Ile	Lys	His	Leu
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														130
Pro	Ala	Val	His	Lys	Ile	Gln	Ser	Leu	Gln	Lys	Val	Leu	Leu	Asp
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														145
Ile	Gln	Asp	Asn	Ile	Asn	Ile	His	Ile	Val	Ala	Arg	Asn	Ser	Phe
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														160
Met	Gly	Leu	Ser	Phe	Glu	Ser	Val	Ile	Leu	Trp	Leu	Ser	Lys	Asn
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														175
Gly	Ile	Glu	Glu	Ile	His	Asn	Cys	Ala	Phe	Asn	Gly	Thr	Gln	Leu
														185
														190
Asp	Glu	Leu	Asn	Leu	Ser	Asp	Asn	Asn	Leu	Glu	Glu	Leu	Pro	
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														205
Asn	Asp	Val	Phe	Gln	Gly	Ala	Ser	Gly	Pro	Val	Ile	Leu	Asp	Ile
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														220
Ser	Arg	Thr	Lys	Val	His	Ser	Leu	Pro	Asn	His	Gly	Leu	Glu	Asn
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Leu	Lys	Lys	Leu	Arg	Ala	Arg	Ser	Thr	Tyr	Arg	Leu	Lys	Lys	Leu
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														250
Pro	Asn	Leu	Asp	Lys	Phe	Val	Thr	Leu	Met	Glu	Ala	Ser	Leu	Thr
														260
														265
Tyr	Pro	Ser	His	Cys	Cys	Ala	Phe	Ala	Asn	Leu	Lys	Arg	Gln	Ile
														275
														280
Ser	Glu	Leu	His	Pro	Ile	Cys	Asn	Lys	Ser	Ile	Leu	Arg	Gln	Asp
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														295
Ile	Asp	Asp	Met	Thr	Gln	Ile	Gly	Asp	Gln	Arg	Val	Ser	Leu	Ile
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														310
Asp	Asp	Glu	Pro	Ser	Tyr	Gly	Lys	Gly	Ser	Asp	Met	Met	Tyr	Asn
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														325
Glu	Phe	Asp	Tyr	Asp	Leu	Cys	Asn	Glu	Val	Val	Asp	Val	Thr	Cys
														335
														340
Ser	Pro	Lys	Pro	Asp	Ala	Phe	Asn	Pro	Cys	Glu	Asp	Ile	Met	Gly
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														355
														360

Tyr Asn Ile Leu Arg Val Leu Ile Trp Phe Ile Ser Ile Leu Ala  
                  365                     370                     375  
 Ile Thr Gly Asn Thr Thr Val Leu Val Val Leu Thr Thr Ser Gln  
                  380                     385                     390  
 Tyr Lys Leu Thr Val Pro Arg Phe Leu Met Cys Asn Leu Ala Phe  
                  395                     400                     405  
 Ala Asp Leu Cys Ile Gly Ile Tyr Leu Leu Ile Ala Ser Val  
                  410                     415                     420  
 Asp Ile His Thr Lys Ser Gln Tyr His Asn Tyr Ala Ile Asp Trp  
                  425                     430                     435  
 Gln Thr Gly Ala Gly Cys Asp Ala Ala Gly Phe Phe Thr Val Phe  
                  440                     445                     450  
 Ala Ser Glu Leu Ser Val Tyr Thr Leu Thr Ala Ile Thr Leu Glu  
                  455                     460                     465  
 Arg Trp His Thr Ile Thr His Ala Met Gln Leu Glu Cys Lys Val  
                  470                     475                     480  
 Gln Leu Arg His Ala Ala Ser Val Met Val Leu Gly Trp Thr Phe  
                  485                     490                     495  
 Ala Phe Ala Ala Ala Leu Phe Pro Ile Phe Gly Ile Ser Ser Tyr  
                  500                     505                     510  
 Met Lys Val Ser Ile Cys Leu Pro Met Asp Ile Asp Ser Pro Leu  
                  515                     520                     525  
 Ser Gln Leu Tyr Val Met Ala Leu Leu Val Leu Asn Val Leu Ala  
                  530                     535                     540  
 Phe Val Val Ile Cys Gly Cys Tyr Thr His Ile Tyr Leu Thr Val  
                  545                     550                     555  
 Arg Asn Pro Thr Ile Val Ser Ser Ser Asp Thr Lys Ile Ala  
                  560                     565                     570  
 Lys Arg Met Ala Thr Leu Ile Phe Thr Asp Phe Leu Cys Met Ala  
                  575                     580                     585  
 Pro Ile Ser Phe Phe Ala Ile Ser Ala Ser Leu Lys Val Pro Leu  
                  590                     595                     600  
 Ile Thr Val Ser Lys Ala Lys Ile Leu Leu Val Leu Phe Tyr Pro  
                  605                     610                     615  
 Ile Asn Ser Cys Ala Asn Pro Phe Leu Tyr Ala Ile Phe Thr Lys  
                  620                     625                     630  
 Asn Phe Arg Arg Asp Phe Phe Ile Leu Leu Ser Lys Phe Gly Cys  
                  635                     640                     645  
 Tyr Glu Met Gln Ala Gln Ile Tyr Arg Thr Glu Thr Ser Ser Ala  
                  650                     655                     660  
 Thr His Asn Phe His Ala Arg Lys Ser His Cys Ser Ser Ala Pro

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670

675

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Gln Asn

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Ala Ile Glu Leu Arg Phe Val Leu Thr Lys Leu Arg Val Ile Pro  
35 40 45

Lys Gly Ser Phe Ala Gly Phe Gly Asp Leu Glu Lys Ile Glu Ile  
50 55 60

Ser Gln Asn Asp Val Leu Glu Val Ile Glu Ala Asp Val Phe Ser  
65 70 75

Asn Leu Pro Lys Leu His Glu Ile Arg Ile Glu Lys Ala Asn Asn  
80 85 90

Leu Leu Tyr Ile Asn Pro Glu Ala Phe Gln Asn Leu Pro Ser Leu  
95 100 105

Arg Tyr Leu Leu Ile Ser Asn Thr Gly Ile Lys His Leu Pro Ala  
110 115 120

Val His Lys Ile Gln Ser Leu Gln Lys Val Leu Leu Asp Ile Gln  
125 130 135

Asp Asn Ile Asn Ile His Ile Val Ala Arg Asn Ser Phe Met Gly  
140 145 150

Leu Ser Phe Glu Ser Val Ile Leu Trp Leu Ser Lys Asn Gly Ile  
155 160 165

Glu Glu Ile His Asn Cys Ala Phe Asn Gly Thr Gln Leu Asp Glu  
170 175 180

Leu Asn Leu Ser Asp Asn Asn Asn Leu Glu Glu Leu Pro Asn Asp  
185 190 195

Val Phe Gln Gly Ala Ser Gly Pro Val Ile Leu Asp Ile Ser Arg  
200 205 210

Thr Lys Val His Ser Leu Pro Asn His Gly Leu Glu Asn Leu Lys  
215 220 225

Lys Leu Arg Ala Arg Ser Thr Tyr Arg Leu Lys Lys Leu Pro Asn  
                   230                  235                  240  
  
 Leu Asp Lys Phe Val Thr Leu Met Glu Ala Ser Leu Thr Tyr Pro  
                   245                  250                  255  
  
 Ser His Cys Cys Ala Phe Ala Asn Leu Lys Arg Gln Ile Ser Glu  
                   260                  265                  270  
  
 Leu His Pro Ile Cys Asn Lys Ser Ile Leu Arg Gln Asp Ile Asp  
                   275                  280                  285  
  
 Asp Met Thr Gln Ile Gly Asp Gln Arg Val Ser Leu Ile Asp Asp  
                   290                  295                  300  
  
 Glu Pro Ser Tyr Gly Lys Gly Ser Asp Met Met Tyr Asn Glu Phe  
                   305                  310                  315  
  
 Asp Tyr Asp Leu Cys Asn Glu Val Val Asp Val Thr Cys Ser Pro  
                   320                  325                  330  
  
 Lys Pro Asp Ala Phe Asn Pro Cys Glu Asp Ile Met Gly Tyr Asn  
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 Ile Leu Arg Val Leu Ile Trp Phe Ile Ser Ile Leu Ala Ile Thr  
                   350                  355                  360  
  
 Gly Asn Thr Thr Val Leu Val Val Leu Thr Thr Ser Gln Tyr Lys  
                   365                  370                  375  
  
 Leu Thr Val Pro Arg Phe Leu Met Cys Asn Leu Ala Phe Ala Asp  
                   380                  385                  390  
  
 Leu Cys Ile Gly Ile Tyr Leu Leu Leu Ile Ala Ser Val Asp Ile  
                   395                  400                  405  
  
 His Thr Lys Ser Gln Tyr His Asn Tyr Ala Ile Asp Trp Gln Thr  
                   410                  415                  420  
  
 Gly Ala Gly Cys Asp Ala Ala Gly Phe Phe Thr Val Phe Ala Ser  
                   425                  430                  435  
  
 Glu Leu Ser Val Tyr Thr Leu Thr Ala Ile Thr Leu Glu Arg Trp  
                   440                  445                  450  
  
 His Thr Ile Thr His Ala Met Gln Leu Glu Cys Lys Val Gln Leu  
                   455                  460                  465  
  
 Arg His Ala Ala Ser Val Met Val Leu Gly Trp Thr Phe Ala Phe  
                   470                  475                  480  
  
 Ala Ala Ala Leu Phe Pro Ile Phe Gly Ile Ser Ser Tyr Met Lys  
                   485                  490                  495  
  
 Val Ser Ile Cys Leu Pro Met Asp Ile Asp Ser Pro Leu Ser Gln  
                   500                  505                  510  
  
 Leu Tyr Val Met Ala Leu Leu Val Leu Asn Val Leu Ala Phe Val  
                   515                  520                  525

Val	Ile	Cys	Gly	Cys	Tyr	Thr	His	Ile	Tyr	Leu	Thr	Val	Arg	Asn
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Pro	Thr	Ile	Val	Ser	Ser	Ser	Ser	Asp	Thr	Lys	Ile	Ala	Lys	Arg
				545					550				555	
Met	Ala	Thr	Leu	Ile	Phe	Thr	Asp	Phe	Leu	Cys	Met	Ala	Pro	Ile
				560					565				570	
Ser	Phe	Phe	Ala	Ile	Ser	Ala	Ser	Leu	Lys	Val	Pro	Leu	Ile	Thr
				575					580				585	
Val	Ser	Lys	Ala	Lys	Ile	Leu	Leu	Val	Leu	Phe	Tyr	Pro	Ile	Asn
				590					595				600	
Ser	Cys	Ala	Asn	Pro	Phe	Leu	Tyr	Ala	Ile	Phe	Thr	Lys	Asn	Phe
				605					610				615	
Arg	Arg	Asp	Phe	Phe	Ile	Leu	Leu	Ser	Lys	Phe	Gly	Cys	Tyr	Glu
				620					625				630	
Met	Gln	Ala	Gln	Ile	Tyr	Arg	Thr	Glu	Thr	Ser	Ser	Ala	Thr	His
				635					640				645	
Asn	Phe	His	Ala	Arg	Lys	Ser	His	Cys	Ser	Ser	Ala	Pro	Arg	Val
				650					655				660	
Thr	Asn	Ser	Tyr	Val	Leu	Val	Pro	Leu	Asn	His	Ser	Ser	Gln	Asn
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				20				25					30		
Ala	Ile	Glu	Leu	Arg	Phe	Val	Leu	Thr	Lys	Leu	Arg	Val	Ile	Pro	
				35				40					45		
Lys	Gly	Ser	Phe	Ala	Gly	Phe	Gly	Asp	Leu	Glu	Lys	Ile	Glu	Ile	
				50					55				60		
Ser	Gln	Asn	Asp	Val	Leu	Glu	Val	Ile	Glu	Ala	Asp	Val	Phe	Ser	
				65				70					75		
Asn	Leu	Pro	Lys	Leu	His	Glu	Ile	Arg	Ile	Glu	Lys	Ala	Asn	Asn	
				80					85				90		
Leu	Leu	Tyr	Ile	Asn	Pro	Glu	Ala	Phe	Gln	Asn	Leu	Pro	Ser	Leu	
				95					100				105		
Arg	Tyr	Leu	Leu	Ile	Ser	Asn	Thr	Gly	Ile	Lys	His	Leu	Pro	Ala	

110	115	120
Val His Lys Ile Gln Ser Leu Gln Lys Val	Leu Leu Asp Ile Gln	
125	130	135
Asp Asn Ile Asn Ile His Ile Val Ala Arg Asn Ser Phe Met Gly		
140	145	150
Leu Ser Phe Glu Ser Val Ile Leu Trp Leu Ser Lys Asn Gly Ile		
155	160	165
Glu Glu Ile His Asn Cys Ala Phe Asn Gly Thr Gln Leu Asp Glu		
170	175	180
Leu Asn Leu Ser Asp Asn Asn Leu Glu Glu Leu Pro Asn Asp		
185	190	195
Val Phe Gln Gly Ala Ser Gly Pro Val Ile Leu Asp Ile Ser Arg		
200	205	210
Thr Lys Val His Ser Leu Pro Asn His Gly Leu Glu Asn Leu Lys		
215	220	225
Lys Leu Arg Ala Arg Ser Thr Tyr Arg Leu Lys Lys Leu Pro Asn		
230	235	240
Leu Asp Lys Phe Val Thr Leu Met Glu Ala Ser Leu Thr Tyr Pro		
245	250	255
Ser His Cys Cys Ala Phe Ala Asn Leu Lys Arg Gln Ile Ser Glu		
260	265	270
Leu His Pro Ile Cys Asn Lys Ser Ile Leu Arg Gln Asp Ile Asp		
275	280	285
Asp Met Thr Gln Ile Gly Asp Gln Arg Val Ser Leu Ile Asp Asp		
290	295	300
Glu Pro Ser Tyr Gly Lys Gly Ser Asp Met Met Tyr Asn Glu Phe		
305	310	315
Asp Tyr Asp Leu Cys Asn Glu Val Val Asp Val Thr Cys Ser Pro		
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Lys Pro Asp Ala Phe Asn Pro Cys Glu Asp Ile Met Gly Tyr Asn		
335	340	345
Ile Leu Arg		

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